

WAF 3: CSS, BRA/RI/FS/ROD, AA, ABS, PE, General Investigative

■ WAF 3 Manager – Mark Raney

■ Major Support Activities Included

- Ambient Air Program
- ABS Study (initiated under WAF 3)
- Processing Areas
- General Investigative

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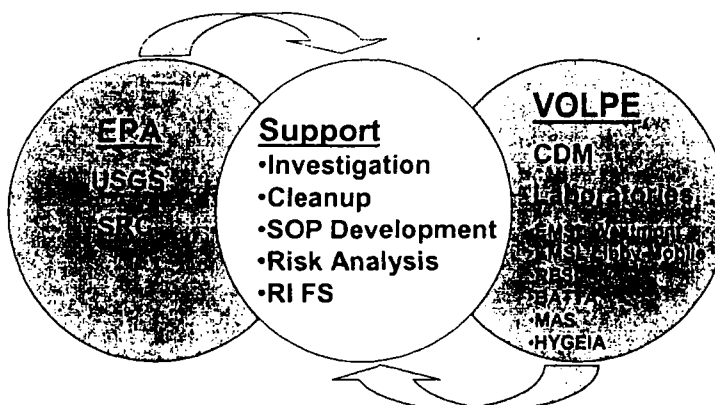
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Investigative, Analytical & Risk Assessment Support



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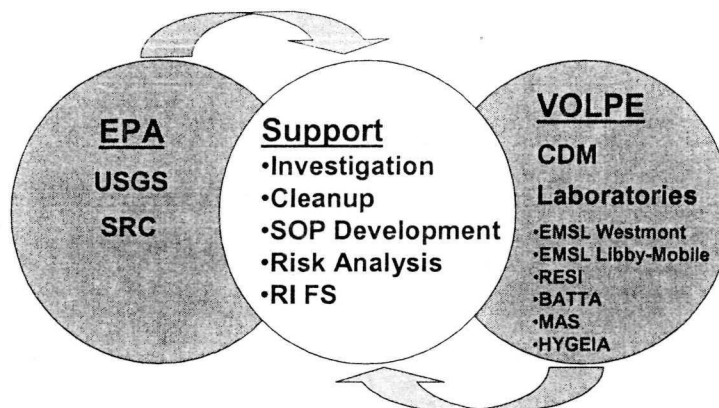
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WAF 3: Ambient Air Program (OUs 1, 2, 4, 5, & 6)

■ Timeline:

October 3, 2006 – Started AA sampling

- 14 OU4 locations
- 2 background locations (Helena & Eureka)
- Custom hardwired housings
- Sampling schedule = 10 day schedule (5 days on and 5 days off)
- 0.00004 S/cc = Target Analytical Sensitivity
- MET Data – Downloaded from 3 NOAA Stations
- Collocated High Volume (14,000 L) & Low Volume (10,500), 25mm, 0.08 µ Samples
- Comparison samples 0.45 µ samples & adult/child height samples
 - October 2006 (2 events) - 6 Locations
 - February (2 events) & June (1 event) 2007 – 4 Locations (two sampled per event)

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WAF 3: Ambient Air Program (OUs 1, 2, 4, 5, & 6)

■ Timeline Cont...:

December 7, 2006 - Final, Revision 1, SAP for Outdoor Ambient Air Monitoring
Operable Unit 4, Libby Montana, with modifications

April 21, 2007 – Rod of rebar was pierced through wall of housing unit and
samples damaged at Indian Head Rd (Plummer Elementary

July 3, 2007 - Final Addendum, SAP for Outdoor Ambient Air Monitoring,
Former Processing Areas, Operable Units 1, 2, 5, and 6

July 18, 2007 – Expansion Event 1: 3501 Haul Rd (KDC Bluffs area)
& 4500 Hwy 2W (near BNSF rail)

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WAF 3: Ambient Air Program (OUs 1, 2, 4, 5, & 6)

■ Timeline Cont...:

- August 3, 2007 – Expansion Event 2: Fisher River bridge site
- August 12, 2007 – Samples stolen from Indian Head Rd (Plummer Elementary)
- August 19, 2007 – Expansion Event 3: KDC Flyway (5002 Hwy 37 N)
- October 1, 2007 – 7 of the original 14 OU4 sites and 1 background site (Eureka) discontinued (Event 34)
- October 1, 2007 – Cease collection of 0.45 μ samples, adult/child height samples, and reduces sample collection for OU4 to 5 days on, 15 days off

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WAF 3: Ambient Air Program (OUs 1, 2, 4, 5, & 6)

■ Other Sampling Issues:

- Various times throughout the year, power outages at select locations have resulted in voided samples
- Reanalysis of Events 1-3, according to Lab MOD 66
 - characterize particles classified as LA, based on levels of sodium and potassium peaks observed in the EDS

■ Collection (to-date):

- 35 OU4 and 7 expansion air monitoring events successfully collected
- Total of 1,745 ambient air (AA-XXXXX) samples collected

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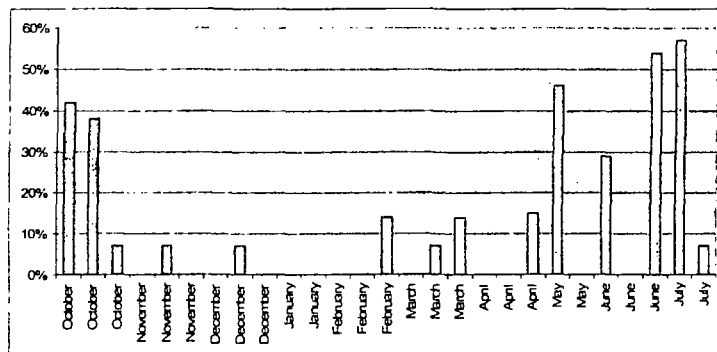


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WAF 3: Ambient Air Program

OU 4 - Detection Frequency by Month (total LA) (according to SRC Nov Monthly Report)



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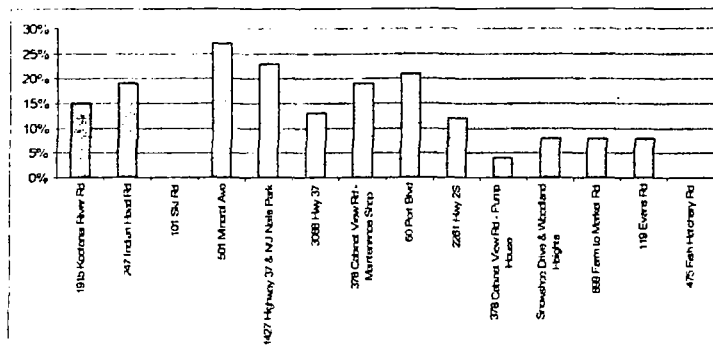


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WAF 3: Ambient Air Program

OU 4 - Detection Frequency by Location (total LA) (according to SRC Nov Monthly Report)



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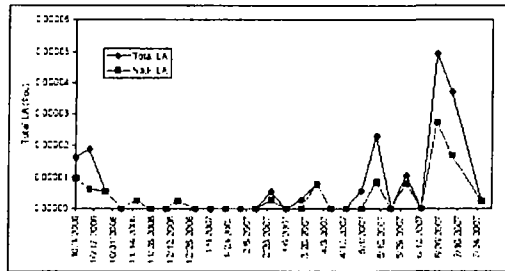


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WAF 3: Ambient Air Program

OU 4 – Mean Concentration (all Libby Stations) (according to SRC Nov Monthly Report)



Results from July 16-23, 2007 were not available in the Libby2 Database as of 10-24-07.

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WAF 3: Activity-Based Study (ABS)

■ Task Manager – Michelle Heimgartner

- April 18, 2007 - Draft SAP for Indoor Air Monitoring, Operable Unit 4
- Draft SAP for Indoor Air Monitoring, Operable Unit 4
- July 6, 2007 - Final SAP for Indoor Air Monitoring, Operable Unit 4
- Final SAP for Indoor Air Monitoring, Operable Unit 4

■ Four Sampling Events

- Interior ABS (4 events)
- Exterior ABS (2 events)

■ Event 1: July 9th - August 29th, 2007

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WAF 3: Activity-Based Study (ABS)

- **Property Selection**
 - Identified list of 285 potential properties meeting bin criteria
 - 60 of 285 properties agreed to participate
 - Remaining properties discovered through intense community outreach
 - 106 properties selected for Indoor ABS, Outdoor ABS, or a combination
- **Soil sampling and property-wide VV investigation**
 - VV investigations conducted at 118 properties
 - Soil Samples collected at 94 properties
- **Some properties were placed into different Bins as a result of soil sampling and VV**

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WAF 3: Activity-Based Study (ABS)

- **Event 1 ABS Summary:**
 - A total of 387 ABS scenarios conducted at 106 different properties
 - 4 Sampling Teams (6 people)
 - Exterior - two teams of 3 people
 - Interior - two teams of 3 people
 - Additional ABS Support Staff
 - Field Team Leader (FTL)
 - Community Involvement Coordinator (CIC)
 - Sample Coordinator
 - Health & Safety

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WAF 3: Exterior ABS

- **Target of 15 Homes per Category (total = 75)**
- **Total of 75 Locations at 62 Different Properties**
 - Some properties had multiple "sub areas" with varying levels on surficial contamination

Soil Category	Residential Source	
	PLM-VE	Visual Vermiculite
1	None (clean fill has been added)	
2	Bin A (ND)	No
3	Bin A (ND)	Yes
4	Bin B1 (<0.2%)	Either Yes or No
5	Bin B2 (0.2%-1%)	Either Yes or No

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WAF 3: Exterior ABS

- **Each House Completed in One Day***
 - Each team required approx. 8 to 9 hours to complete each property:
 - 1 to 1.5 hours of setup (including soil sample & GPS collection)
 - 6 to 7 hours of scenario ABS sampling
 - 1.5 hours of tear down & paperwork
 - After mod for overloaded air cassettes on 8/16/07, less time was spent at each property and multiple properties sampled daily

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WAF 3: Exterior ABS

- **Three Scenarios Conducted per Property**
(total of 225 diff. scenarios)
 - Lawn mowing scenario
 - Raking scenario
 - Child's play scenario
- **Field Soil Moisture & Texture Tests**
- **Total = 529 Field Samples**
 - Air samples = 450 (includes 225 high + 225 low volume)
 - Target Analytical Sensitivity = 0.001 S/cc
 - Soil samples = 79 (includes FD samples)

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WAF 3: Interior ABS

- **Total of 81 Properties (target = 80 properties)**
 - *One additional property included due to the uncooperativeness of one homeowner during Event 1

Category	Did Outdoor Soil Cleanup Take Place?	Post-cleanup Surface Soil		
		VCS	PLM Detect	
1	No	-	and	-
2		+	or	+
3	Yes	-	and	-
4		+	and	-

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WAF 3: Interior ABS

■ Most Houses Completed over Two Days

- 7 Properties - passive/active conducted consecutively on the same day
- Each team conducted one scenario at two separate houses per day
- Approx. 5 to 6 hours for each scenario/house:
 - 1 hour of setup (including pre condition documentation & dust sampling)
 - 4 to 4.5 hours scenario ABS sampling
 - 1.5 hours of tear down & paperwork

■ Two Scenarios Conducted at Each Property

(total of 162 separate scenarios)

- Active scenario
- Passive scenario

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WAF 3: Interior ABS

■ Total Number of Field Samples = 618

- Air Samples = 322
 - 161 High + 161 Low volume
 - Target Analytical Sensitivity = 0.0002 S/cc
- Dust Samples = 101
 - Includes FD samples & when samples collected per floor
 - Target Analytical Sensitivity = 20 S/cm²
 - 10 Composite Points (optimal 4 accessible, 4 infrequently accessed, & 2 inaccessible areas)
- Soil Samples = 195 (includes FD samples & soils from properties that later refused or no longer fit contamination criteria)

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WAF 3: Processing Areas (OUs 1, 2, 5, & 6)

■ Task Manager - Amishi Castelli

■ Processing Areas

- OU1 (Export Plant)
- OU2 (Screening Plant)
- OU5 (Stimson)
- OU6 (BNSF)
- Data Summary Report (DSR)
- Conceptual Site Model (CSM)
- Data Gap Analysis
- Data Gap SAP

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WAF 3: Processing Areas (OUs 1, 2, 5, & 6)

■ OU1 (Export Plant)

- DSR - developed & finalized
- CSM - developed & finalized
- Data Gap Analysis - developed & finalized
 - Showed need to collect further soil and indoor ABS samples
- Data Gap SAP - developed & finalized
- Sampling began in September 2007

■ OU2 (Screening Plant)

- Limited to Planning Discussions

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WAF 3: Processing Areas (OUs 1, 2, 5, & 6)

■ OU5 (Stimson)

- DSR - developed to Draft Final stage
- CSM - developed & finalized
- Data Gap Analysis (soil & wood chip/waste bark) - developed & finalized
 - Showed need to collect soil & wood chip/waste bark samples
- Data Gap SAP (soil & wood chip/waste bark) - developed & finalized

■ OU6 (BNSF)

- DSR - developed to Draft Final stage
- CSM - developed to Draft Final stage

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WAF 3: General Investigative

- **Lab Management & Analytical Method Development & Modification**
 - Prioritization and Coordination of Project Analytical Support
 - New Indirect Prep SOP
 - Standardizing LA Analysis Characterization across labs, spectra reviews, etc.
 - Support of Analytical Validation Activities
 - Job Specific and Method Modifications, Etc.
- **Participation in TAU Calls & Development of Tech Memos & Studies**
 - Tech Memos # 8, 11, etc.
- **Analysis of SQAPP Samples**
 - Including Task 6-9 samples (following new TEM indirect SOP)

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WAF 3: General Investigative

- **Development and Modification of Field SOPs**
 - SOP for Semi-Quantitative Visual estimation of Vermiculite in Soil
 - 30-pt Soil Sampling SOP
 - Dust Pilot Study, SOP for 30/10-pt Dust Sampling
 - Comparison of ERT ABS & OU4 ABS SAPs
 - Pilot Study for Shipping Cassettes Upright
 - Field SOP Modifications, Etc.
- **Unplanned Site Investigations**
- **Development of Project SAPs, such as Site Wide QAPP**
 - Draft – awaiting comments

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WAF 7: Troy Support

- **WAF 7 Manager – Mark Raney**
- **Major Support Activities Included**
 - TAPE Development (review & comments)
 - Mentoring of Sampling Teams
 - Analyzed Personal Monitoring Samples
 - Analysis of Dust Samples (1,200+)
 - Soil Prep Lab Mentoring
 - Lab Mentoring (PLM & TEM)
 - Evaluated/Prioritized 23 Troy Properties for Cleanup

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WAF 8: Toxicology Studies

- WAF 8 Manager – Mark Raney
- Task Manager – Amishi Castelli
- Major Support Activities Include
 - ABS Study (initiated under WAF 3)
 - June 2007 - technical experts at LA Research Planning Meeting (RTP, NC)
 - July 23rd-24th Epidemiological Meeting Support (Denver)
 - SRC Risk Assessment Support (contract established May 2007)
 - Electronic Conversion of Historic WR Grace Hardcopy Worker Data
 - Initiated procurement for White Paper on Fiber-like Structures
 - Supported USGS Collection of Dosing Material at Mine

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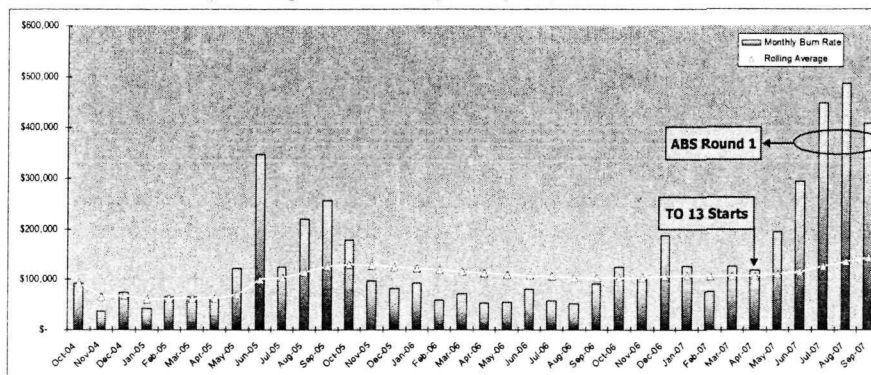
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SRC
Contract
for R.H.

Investigation Cost Breakdown

- CDM TO 6 and 13: Investigations and Analytical
 - Total TO Value (projected): TO6 – \$3.6M; TO13 – \$4.2M
 - Monthly Average Burn Rate (actual) = \$104K



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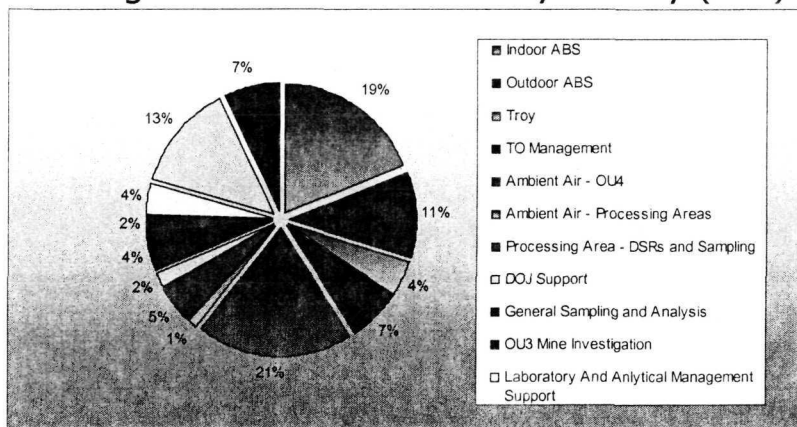


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Investigation Cost Breakdown

■ Investigation Cost Breakdown by Activity (ITD)



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Investigation and Laboratory Cost Breakdown

■ Program Analysis

- Investigation and Analytical Support was 24% of CDM's 2007 budget (up from 11% in 2006)
- 69% of these costs are contained in four programs
 - ABS – 30%
 - AA – 21%
 - RI/FS – 13%
 - Processing Areas – 5%
- Opportunities for Cost Savings
 - Finalize AA
 - Finalize ABS
 - Move to RODs on Processing Areas
 - Implement procedures that reduce sample collection across all program (e.g., PDI, Oversight, Troy, Mine)

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WAF 9: Mine Investigation Support

- **WAF 9 Manager – Bill Halloran, PMP**

- Community Involvement Support
- Field Implementability of SAP
- Oversight of PRP Field Activities
- General Technical Support

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Mine Investigation Support

- **2007 Accomplishments**

- Community Involvement
 - Obtained meeting space for OU3 Stakeholder meeting
 - Assisted in arranging and conducting site tours for OU3 stakeholders

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Mine Investigation Support

- 2007 Accomplishments (continued)
 - Field Implementability of SAP and HASP
 - Review was performed on the implementability of the SAP and HASP. Comments were incorporated into the plans by EPA
 - Selected and marked sampling locations for the Phase I sampling effort. Locations were selected based on Volpe/CDM reconnaissance activities. A total of 66 sample locations were identified and physically marked with surveyor's lathe. GPS coordinates were collected for each of the following locations:
 - Ambient air – 8 locations
 - Surface water and sediment – 26 locations
 - Mine waste – 29 locations
 - Rainy Creek Rd Bed – 3 locations

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Mine Investigation Support

- 2007 Accomplishments (Continued)
 - Oversight of PRP Field Activities
 - Provided independent oversight support of W.R. Grace's Mine (OU3) Phase I Sampling Effort
 - Developed 4 Audit Checklists (Tree Bark and Soil, Surface Water and Sediment, Mine Waste, and Ambient Air)
 - Attended daily tailgate meetings for updates on planned daily activities

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Mine Investigation Support

■ 2007 Accomplishments (Continued)

■ Oversight of PRP Field Activities (continued)

- Performed field audits of sampling activities performed by W.R. Grace's contractor (MWH) at 66 distinct sample locations:
 - 20 Tree bark and soil samples – 10/3, 10/5, 10/8, and 10/11/07
 - 16 ambient air samples – 10/4 and 10/9/07
 - 8 surface water samples – 10/12, 10/16, and 10/17/07
 - 5 tailings impoundment transect samples – 10/16 and 10/17/07
 - 5 mine waste samples – 10/11 and 10/15/07
 - 6 stream sediment samples – 10/15 and 10/16/07
 - 6 stream discharge gauging – 10/18/07

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Mine Investigation Support

■ 2007 Accomplishments (Continued)

■ Oversight of PRP Field Activities (continued)

- Provided regular briefings to EPA on sampling effort and audit findings
- Prepared final report documenting the audit activities and results. Several minor deficiencies or deviations from the approved SAP were noted:
 - Sampling personnel did not change gloves between tree bark and soil samples collected from the same location.
 - Tree bark samples were collected from trees under the minimum diameter requirement of 8"-12" at 8 locations.
 - No Douglas Fir trees in the immediate sample area met this minimum diameter requirement.
 - Soil/duff samples collected at 2 tree bark and soil sample locations were collected as 4-point composites instead of the required 5-point composites.
 - Sufficient soil/duff material was not present at the 5th sub-sample location
 - During surface water sampling activities, the multiprobe electronic meter was not decontaminated in accordance with OU-3 SOP Number 3
 - Surface water samples and stream discharge measurements were not taken at the same time/day.
 - Stream flow measurements were taken in turbulent water

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Mine Investigation Support

■ 2007 Accomplishments (continued)

■ General Technical Support

- Worked with the USFS to coordinate response needs for the Vermiculite Mountain forest fire
- Participated in a post-response recap meeting with USFS and EPA to evaluate the response to the Vermiculite Mountain fire, and to begin thinking of long-term needs to fighting fires on Vermiculite Mountain
- Investigated laboratories with capabilities needed to support all of OU3's asbestos and non-asbestos analytical requirements.
- Identified two laboratories, EMSL and Alpha Woods, to support both OU3's asbestos and non-asbestos analytical requirements.
- Coordinated with EMSL to provide an exemption to the project's conflict of interest constraints, in order to permit EMSL to work for WR Grace's contractor in Libby.

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Laboratory Support

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Laboratories

- Close Support Facility (CSF).....Denver, CO
- Project Asbestos Laboratories
 - EMSL Mobile Lab.....Libby, MT
 - EMSL Analytical, Inc.....Westmont, NJ
 - Reservoirs Environmental, Inc.....Denver, CO
 - Hygeia Laboratories, Inc.....Sierra Madre, CA
 - MAS.....Suwanee, GA
 - BATTA.....Newark, DE
 - LabCor (to undergo mentoring).....Seattle, WA
 - Asbestos TEM (to undergo mentoring).....Berkeley, CA

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Laboratory Capabilities

Laboratory	SEM	TEM	PLM	PCM	XRD
EMSL-Mobile		√	√	√	
EMSL-Analytical	√	√	√	√	√
Reservoirs	√	√	√	√	
Hygeia		√	√	√	
MAS	√	√	√	√	√
BATTA		√	√	√	
LabCor	√	√	√	√	√
Asbestos TEM	√	√	√	√	√

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Laboratory Capacity

Laboratory	Number of Analysts			
	AHERA	ISO	Add. ISO in Training	Comment
EMSL-Mobile	1	1		
EMSL-Analytical	4	4	10	To be complete in November
Reservoirs	5	4		
Hygeia	3	2		
MAS	3.5	3.5		Includes one part-time analyst
BATTA	3	1	1	
LabCor	1	1		To Undergo Lab Mentoring
Asbestos TEM	1	1		To Undergo Lab Mentoring
TOTAL	21.5	17.5	11	

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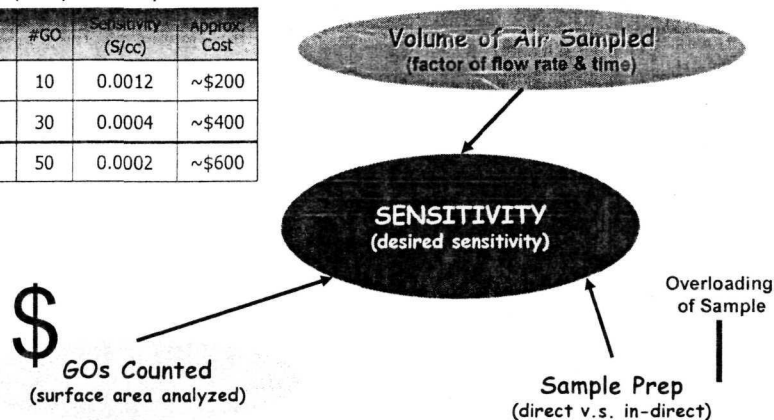
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Capacity & Costs - Balancing Act

TEM (ISO) - Example

Volume of Air (Liters)	#GO	Sensitivity (S/cc)	Approx. Cost
2,500	10	0.0012	~\$200
2,500	30	0.0004	~\$400
2,500	50	0.0002	~\$600



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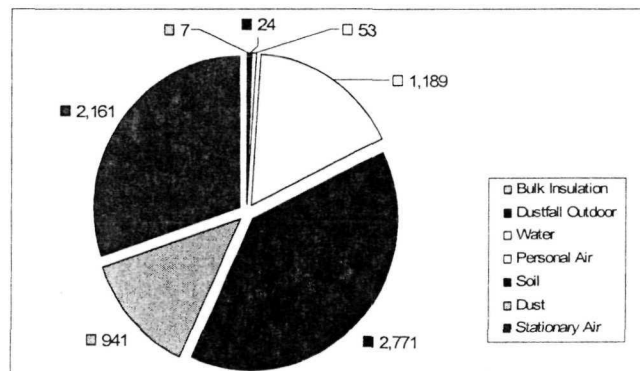
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Breakdown of 2007 Asbestos Analyses

7,146 Analyses

(as of August ANSETS Report)



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